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THE DEFINITIVE GUIDE:

TikTok for OSINT Investigation

TABLE OF CONTENTS

INTRODUCTION

TikTok is the fastest growing social media platform on the internet. Quickly encroaching 1 billion active users, TikTok is becoming the social media platform of choice in the 15-35 age demographic. From an open source intelligence (OSINT) perspective, TikTok is a treasure trove of valuable data, including photos, videos, audio, social networks, and more. This guide will show you how to discover profiles on TikTok, extract content from profiles found, apply analysis to the information found, and expand your investigation from TikTok and beyond all within the constraints of your web browser. No mobile phones or emulators are required.

Investigative Limitations of TikTok on Desktop

Similar to Snapchat, TikTok is a mobile-first app; however, unlike Snapchat, it does have a desktop version. For the sake of this guide, we're going to use the desktop version to discover and extract content. You can use a mobile device or emulator, and for certain data points, you have to, but it's much easier to extract content at scale using tools available on a desktop. This will make much more sense later on in this guide. The TikTok website for desktop has many limitations. This means we're going to use various tools and techniques to still get the information we're looking for.

1

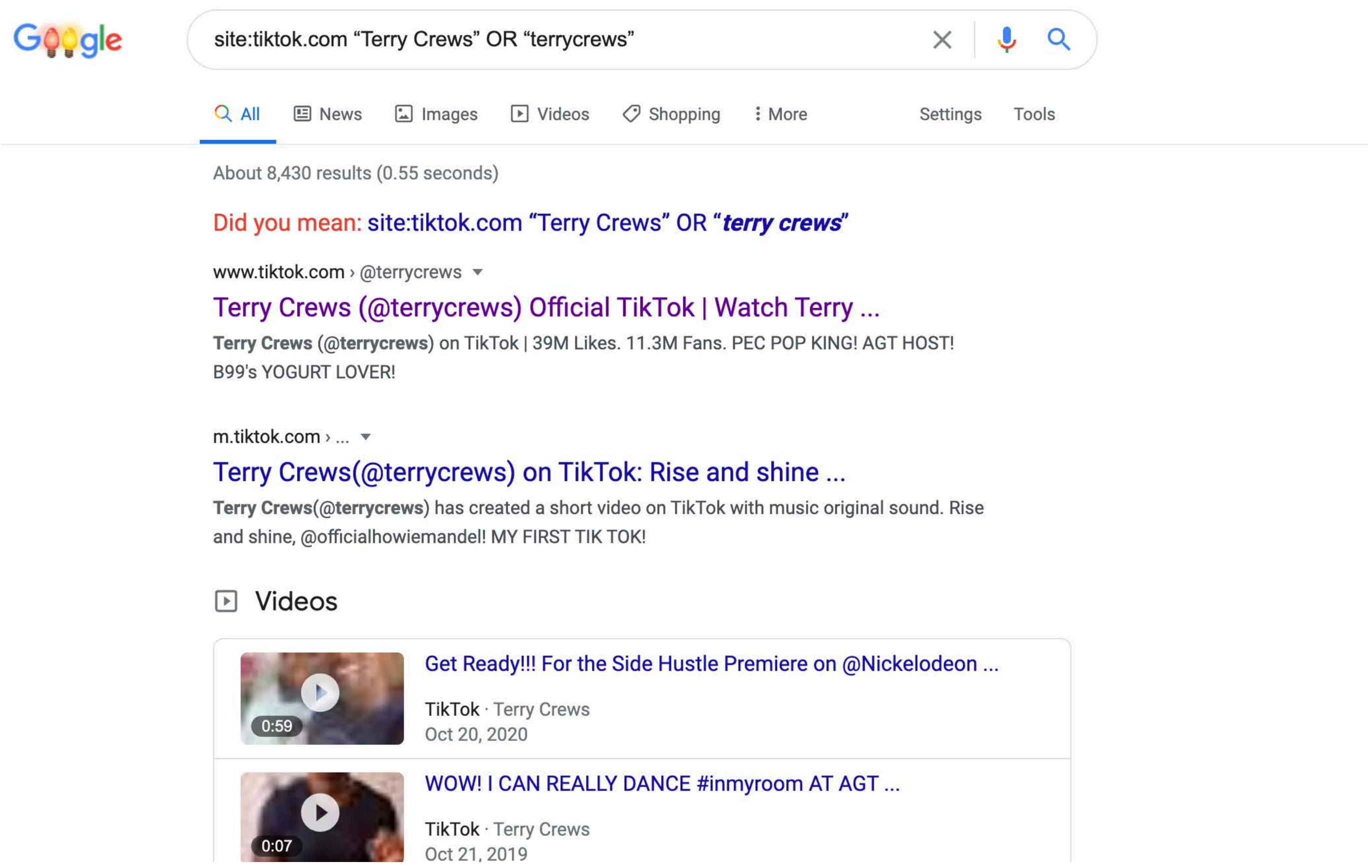
PROFILE DISCOVERY

This chapter will teach techniques to find user profiles using a desktop and how to access the information needed for an OSINT investigation.

TikTok's homepage doesn't have a search engine. When you visit the home page, you only can see the top-grossing accounts and topics or download the mobile app. For most investigative purposes, this isn't helpful. Fortunately, Google indexes pages on TikTok, and we can use Google Search (or any other search engine) to look for specific information on TikTok. Let's take a look at a few methods for profile discovery.

site:tiktok.com"{first + last name}"OR "{username}"

Using Google Search, we can use the site: operator to filter our results to show only the website we specify. In the example above, we used site:tiktok.com to only show results from TikTok. By replacing {first + last name} with the subject in your investigation, you can search the entirety of TikTok specifically for the person you're looking for. If it's a more common name, like John Smith, you'll have to add additional identifiers; however, if it's a unique name like Jake Creps, you'll find much fewer results that are easier to verify. By adding the OR operator, you can tell Google to search for two things at once without requiring both of them to be present on the page. So if you enter site:tiktok.com "John Smith" OR "soccerfan247", Google will search for mentions of John Smith OR soccerfan247 on TikTok.



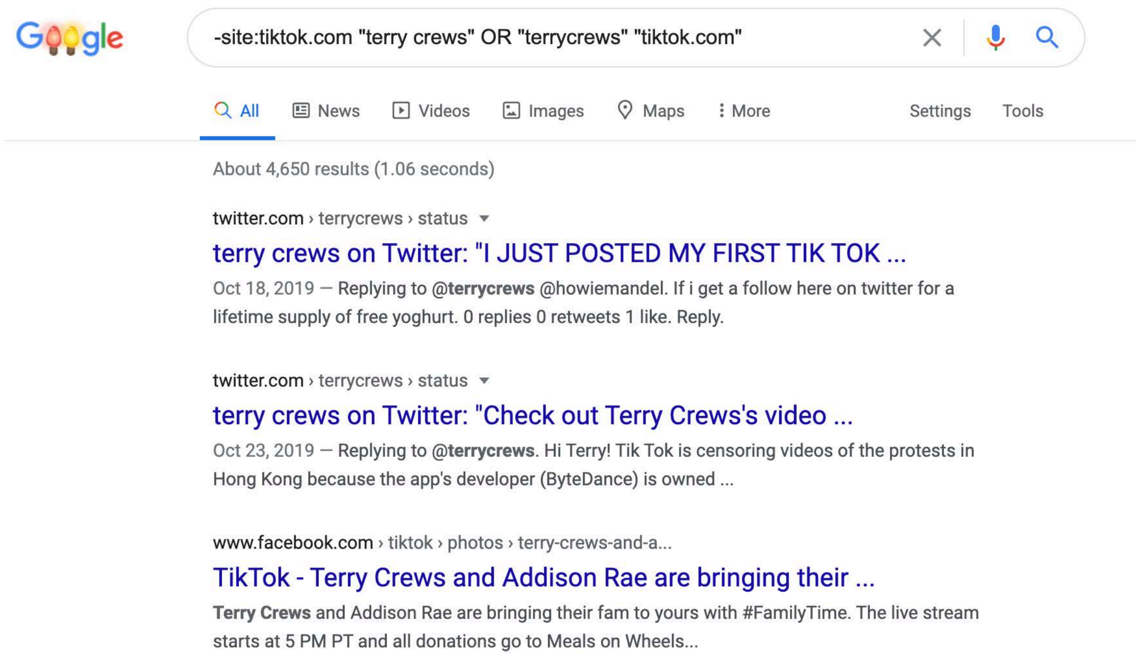
Searching for users (a)

You can enter as many first and last names or usernames as you'd like. Make sure to add the OR operator between each identifier; otherwise your results will get narrower instead of broader. Here's an example.

-site:tiktok.com "{first + last name}" OR "{username}" "tiktok.com"

Let's say that you tried the first method and nothing came up. That's okay and pretty typical. People will often use different display names and usernames across different platforms. We're going to have to get more creative in these situations to find who or what we're searching for.

Using the -site: operator, you're telling Google to check every other website except for TikTok. We're going to use the same name and username inputs here; however, we're going to add "tiktok.com" at the end of the query. What this will do is it will look for all other websites where that name or username can be found, and it will also check for mentions of tiktok.com. This will find users mentioning their TikTok profile on Instagram, Twitter, YouTube, or any other platform. Notice that there isn't an OR operator in between "{username}" and "tiktok.com." This is intentional. We're looking for any combination of name OR username, but the results must include tiktok.com. We don't have to specify the AND operator because it's the default operator on Google. Here's an example (a).



This search contains "tiktok.com" to search for other sites (a)

tiktok.com/@{username}

The last method for profile discovery is the most basic. TikTok uses the same URL structure for every profile page. If you have a list of usernames or emails and want to check if that username has a TikTok profile, simply add the username after tiktok.com/@ and see if the profile has information matching what you already know. Don't forget to add the @ in the URL. Without it, you'll get a 404 page. Here's a correct example.



Searching usernames directly with tiktok.com/@username (b)

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2

CONTENT EXTRACTION

This chapter will show methods to extract the content from profiles for easy analysis once data collection is complete.

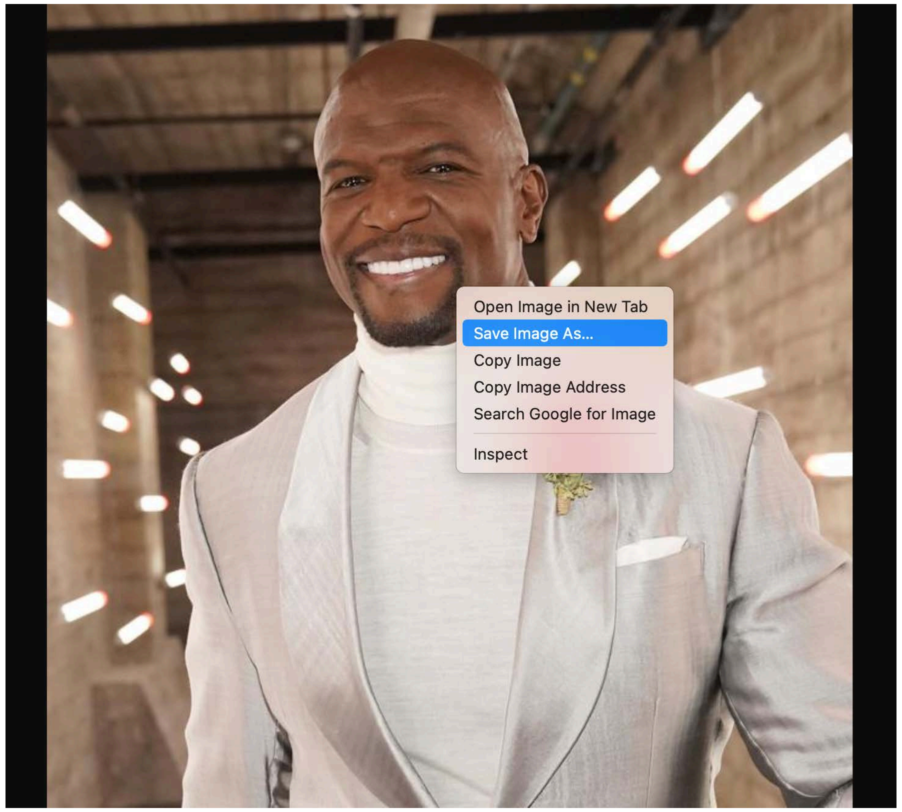
Once a profile that matches the subject in the investigation is found, it's time to start extracting as much data from that profile as possible. Here is where using the desktop version of TikTok limits the amount of information that is accessible. However, it's a great place to start an investigation. If the investigation allows and warrants it, it is possible to expand to the mobile version of the same TikTok profile using a mobile device or emulator. This guide will cover that in future chapters. First, let's discover what can be extracted from the desktop version.



Right-click to open photo in a new tab (a)

Profile Pictures

Unlike Facebook, TikTok only allows users to post one profile picture. Unfortunately, this means if the user changes their profile picture, it's effectively lost. If an internet archive of the page doesn't exist, there's no other way to recover that image. For this reason, it's essential to download that image and archive it for evidence collection purposes and to establish a timeline throughout the investigation in the event the picture changes. Previously, downloading profile pictures on TikTok was more difficult. Now it can be done by simply right-clicking the image, opening it in a new tab, and downloading it in its full resolution.



Right-click to save image to storage (b)

Now that we've downloaded the profile photo, the next step is to copy the username, display name, following count, follower count, like count, profile description, and social media links. Unfortunately, the following, follower, and like lists are unavailable on desktop. If that list is essential for the investigation, using a mobile device or emulator will be necessary. When setting up a profile, TikTok allows users to link their Instagram or YouTube to their TikTok profile page. This is a great pivot point and a verifiable way to link two accounts together. It's important to know that not all users link their profiles, so just because one isn't listed doesn't mean it doesn't exist. This process shouldn't take more than a few seconds. It is easiest to either copy and paste the text, take a screenshot, or both.



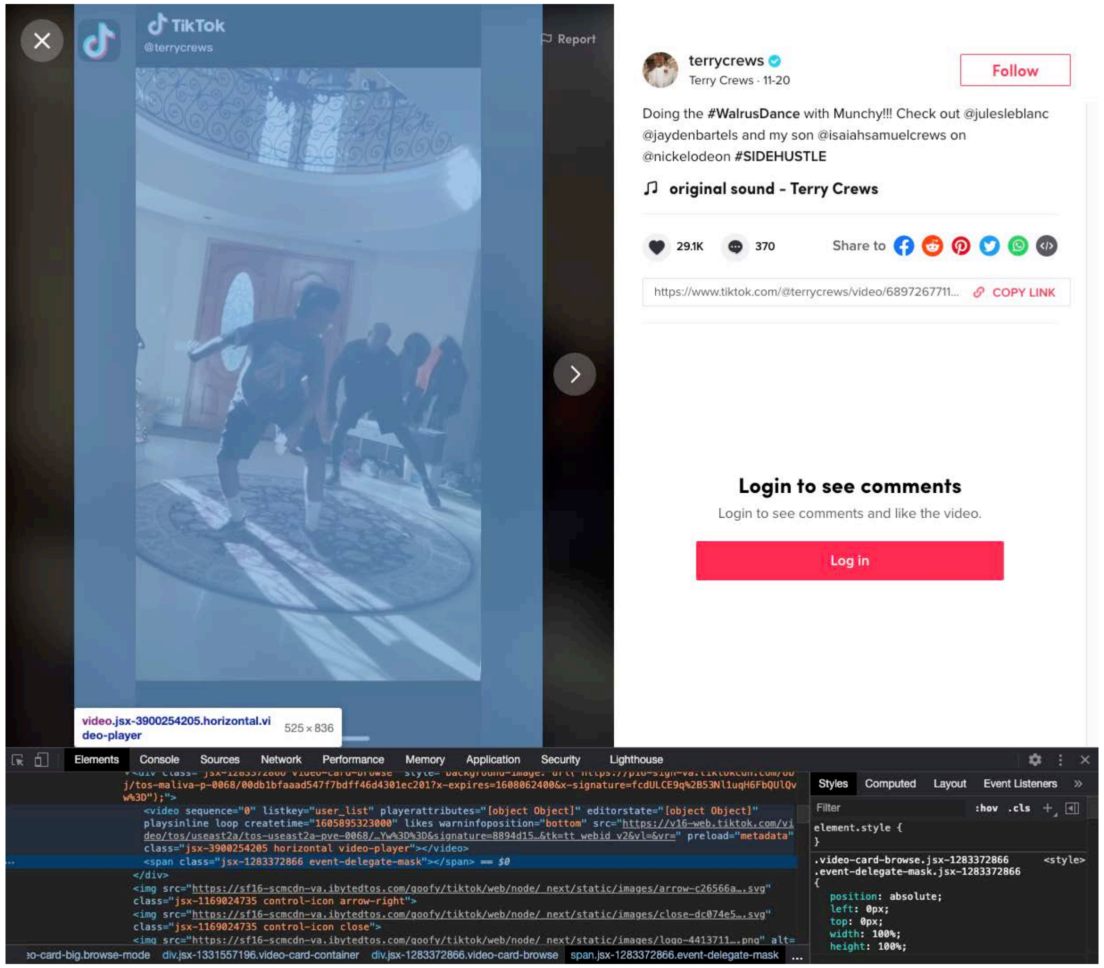
Information included in a TikTok profile

Videos

Videos are the bread and butter of TikTok. Unlike other platforms, almost all of the content on TikTok is user generated. Because of this, the subject of the investigation is very likely to be in these videos. Finding connections, behaviors, and locations and establishing a timeline can be done by analyzing the videos found on TikTok. It is important to download them off of TikTok to archive them in the event the user takes them offline. Unlike profile pictures, it is impossible to right-click on videos to download them. First, it is required to isolate the video on a separate page to download the source video. Here's how to do it.

Start by clicking on the required video. Doing so will open a pop up showing that video, the video description, sound file, and engagement summary.

Right-click on the video and choose "Inspect." For this guide, Google Chrome was used, but this will work on any browser. Next, a panel that has a list of links will show up on the page. Find the one that includes "v-16-web.tiktok.com" in it.



It should be directly above the highlighted elements on the page (as shown above). Right-click on that link and open it in a new tab. This new page will allow the video to be downloaded directly to your local storage. TikTok has made a variety of changes to their desktop version this year. If an error occurs while trying to access a video, try again later or try a different browser.

Repeat this process for every video on the profile of interest until all videos have been downloaded.

Video Descriptions

Each video posted on TikTok has a description. Within that description, users often post hashtags and other accounts mentioned; however, there is also a link to the sound used in that video. These are all data points that will be valuable for the investigation. Let's start with mentions.

TikTok doesn't hyperlink mentions on the desktop version. It is required to copy usernames in the description and paste them into the TikTok URL structure mentioned before to pull up the new profile. Once completed, the same content extraction process can be used on the new profile as was done on the first.

The next step is to find hashtags. Hashtags are hyperlinked on TikTok for desktop. Once clicked, they'll open a new page showing all content that used that same hashtag. Effectively, this is the unofficial hashtag search engine of TikTok. When looking at the URL of the page after clicking on a hashtag link, it will look like tiktok.com/tag/sanfrancisco.

Searching for any hashtag just requires replacing everything after tag/, in this case, "sanfrancisco," with any other topic of choice. Using trending hashtags on other social media profiles can be useful to find relevant content on TikTok. Location names are often searchable hashtags because many TikTok users will tag the city they live in to get more visibility. Here's an example.

It is important to access and understand the date stamp of the video in question. TikTok previously allowed users to see the exact date and time a TikTok video was uploaded. That information is no longer available in the source code. Now, only the month and date that a video was posted is available. That information is located directly to the right of the display name, above the video description.

Lastly, there's the video's audio. This feature is unique to TikTok. They encourage users to take audio from someone else's video to use for their own video. This was originally intended for songs; however, it's used for all types of audio from speeches to impersonations to music and everything in between. By clicking on the audio link in the image, a list of all users that have used the same audio in their video is available. For popular songs or celebrities, this list could be hundreds of other videos. With smaller accounts or regular users, this might only be a few videos. Here's an example.

Through this, it is easy to start creating and analyzing social networks or reverse-engineering viral content. That leads to the next section on applying these discovery steps.



Original sounds can lead to social networks

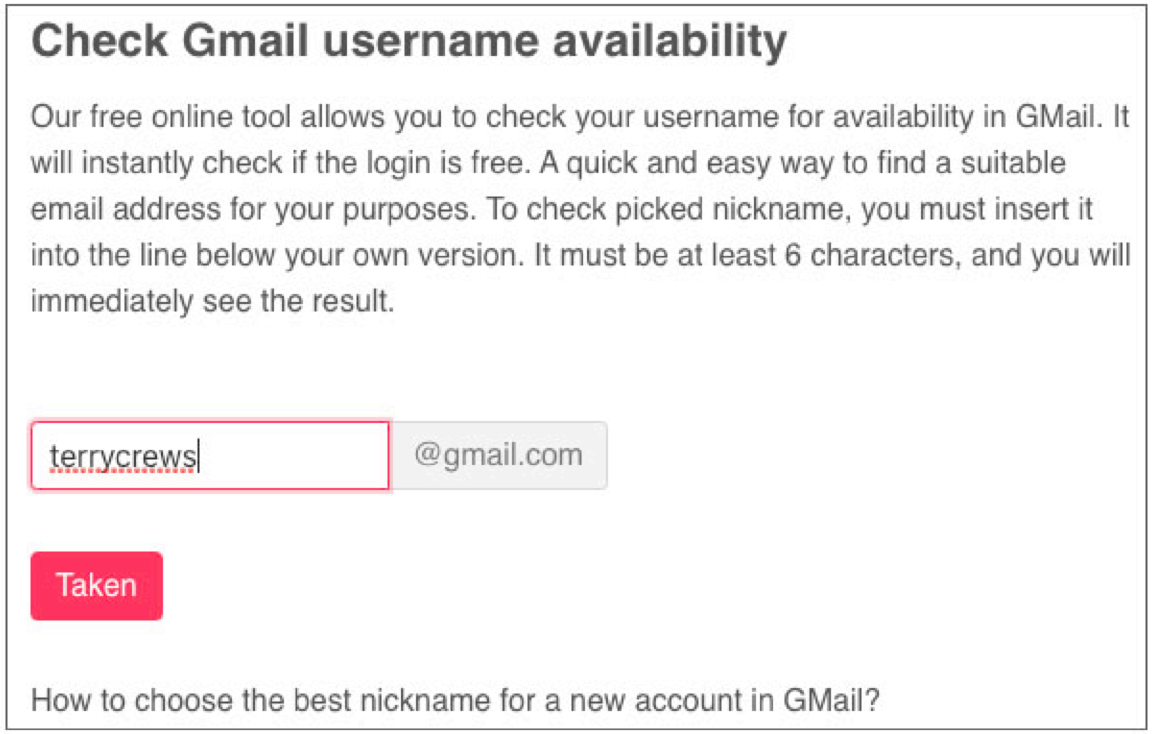
3

APPLIED ANALYSIS

Now that all available content on a TikTok profile has been distracted, it's time to perform applied analysis.

Profile Picture

The first thing to mention is that TikTok automatically removes the EXIF data of a profile image, so there is no additional data from the picture by analyzing the metadata. The next step is to conduct a reverse image search. The best practice for this is to use Google, Bing, and Yandex. Google might be the best for search but can fall short on reverse image search. This will give you reverse image results if the subject is using the same image on other profiles. Doing so will also help get a better idea of how old the picture is or any additional information other platforms may offer. By doing this, we can identify other personal accounts, alias accounts and establish a more clear timeline for the investigation. Here's an example.



Source: checkgmailavailability.com

Biographical Information

The most valuable identifier on TikTok, when it comes to reverse searching, is the username. People often use the same username across multiple profiles. This tends to be true not only for influencers or influencers to-be but also for regular accounts.

Many social media platforms will use the same username as the user's email address, if available, by default, but some users will change this to match their other profiles. Both of these scenarios are helpful for investigators. Reverse searching the username from TikTok will generally help find additional social media profiles. Alternatively, suppose the TikTok profile has a username that doesn't match the username of social media profiles that belong to the same subject. In that case, an email verifier tool can be used to see if that username matches a common email provider such as Gmail, Outlook, Yahoo, Protonmail, etc.

Because TikTok allows users to connect their Instagram and YouTube profiles to their TikTok page, an investigation can quickly expand to those resources to find additional content. Likewise, as mentioned above, identifying if the TikTok username matches an Instagram profile or YouTube channel can be done manually. This guide will cover how to expand an investigation beyond TikTok and cover techniques and tactics to get the most out of that process.

Many people online also use the same profile description for all of their social media accounts. If not the exact description, they copy elements of that description. Searching for the exact description on Google using the quotes operator can help to find other profiles from the same user. However, it is also helpful to break the description apart, sentence by sentence, and search for that individually. Here's an example.

Videos

Videos on TikTok are likely to be where the most valuable information is found when analyzed. TikTok already gives the date that videos are published.

Having these dates is the first step in building an entire timeline when the subject is active online. Beyond just a basic timeline, it can help piece together where the individual was around the time the video was posted.

If the subject's address is known, verifying if the video was shot at home can be done by analyzing the property. By checking for major landmarks, it can be determined where the subject shot the video as well. TikTok videos sometimes include multiple individuals. If the main subject cannot be identified, it's possible to identify associates and connections and find the main subject through them.

Because the date only reflects when the user posted the video to TikTok, there could be a gap between production and publication. Many users will use the TikTok app to record their videos; however, they can record them in advance and publish the video later. Keep this in mind before confirming a timeline.

Video Descriptions

Video descriptions on TikTok are composed of three main elements, as described before. Hashtags, tagged users, and audio. Some hashtags are global and viral; however, some are local and more individualized. Look for the local and individualized ones. This will give clues as to where the individual might live, what events they've attended, or who might be in their immediate or adjacent social network. Tagged users are a bit more straightforward. Suppose the main subject is being more elusive. In that case, using individuals tagged in their TikTok videos to expand the investigation, potentially finding more information about the main subject and their social network.

Lastly, audio can show who is intimately engaging with someone's video. Using audio from another video is more than just a like or a comment; it is someone taking their video and creating original content from it. TikTok allows users to add original sounds, like a speech or a joke; however, they also let users add popular music or anyone else's audio. These can be found as audio clips labeled as "original sound." If someone else uses the original sound for a non-celebrity, more localized account, the likelihood that person is in their social network is much higher.

4

EXPANDING THE SCOPE

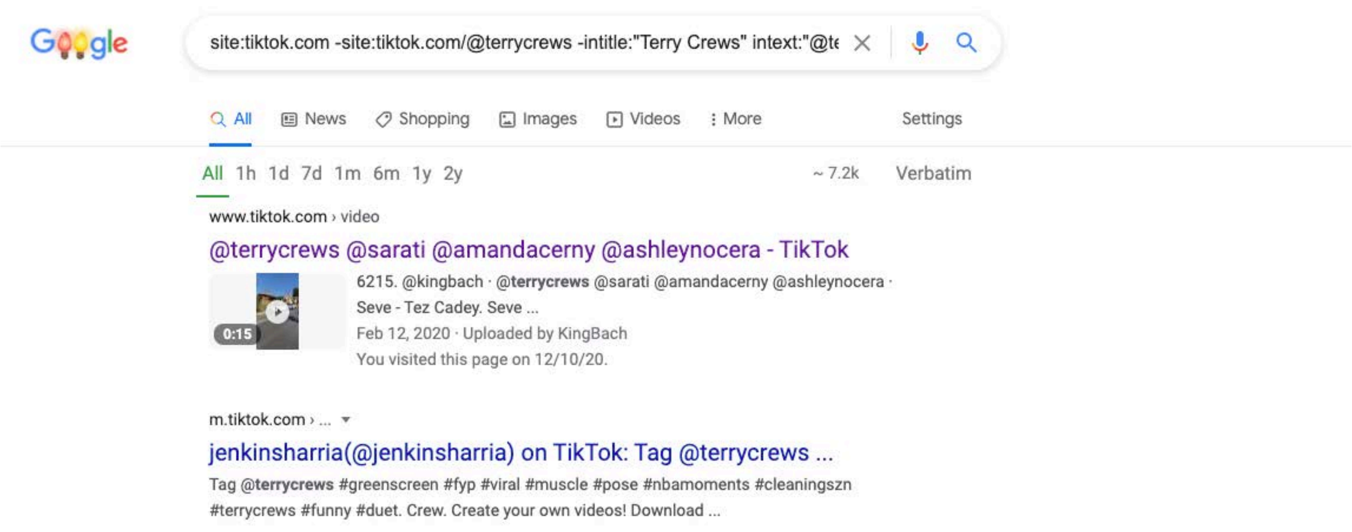
Next, learn what other social media networks can be easily searched from the information gathered from TikTok and how to create a more complete timeline of your subject's social life.

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Once a subject's profile is identified on TikTok, all of the content has been extracted, and the analysis process has begun, it's important to recognize that the investigation isn't over and there might be other information potentially available. Remember that you can tag other users in videos on TikTok, but it is also possible to search for videos that the subject was mentioned in. This is a bit trickier but can be done. By searching Google's index for mentions of the username, {@username}, within the text of the page while simultaneously filtering out the subject's TikTok profile, the exact results can be found. Here's how it's done.

site:tiktok.com -site:tiktok.com/@{username} -intitle:"{display name}" intext:"@{username}"

Using this search technique is a bit more complicated, so let's break it down. The site:tiktok.com command tells Google to only show TikTok in the search results.



Extracted username list (a)

The -site:tiktok.com/@{username} (replacing {username} with your subject's username) command tells Google to remove all results that come from the subject's profile. The -intitle:"{display name}" is added to remove links that list the TikTok user's display name in the web page title. Lastly, the intext:"@{username}" tells Google to look for a username match within the text of the page, specifically in the video description. Here's an example.

This technique is about 90% effective. There may be cases where the subject's profile still appears because of the variety of URL structures TikTok uses for mobile and tablet viewing. It is possible to filter these out also, but the 90% solution is acceptable for most investigations.

5

BROADENING THE INVESTIGATION

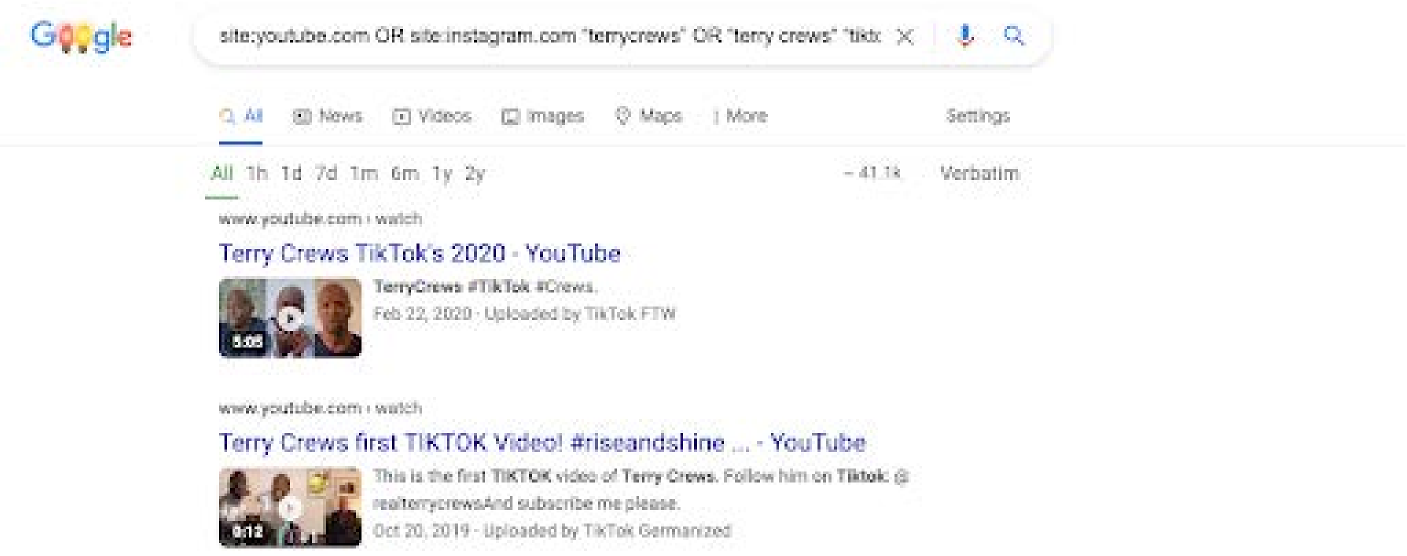
This chapter is about going beyond social media and going one level deeper into your investigation through automation

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Thus far, this guide has shown best practices for identifying, extracting, analyzing profiles and how to expand the scope of an investigation to factor in other user's mentioning a subject. This final chapter is how to broaden an investigation beyond TikTok. While TikTok allows users to connect an Instagram or YouTube channel to their TikTok profile, many users don't use this feature. Yet, because TikTok assumes the user might, we should too. If they don't, an alternative method is needed for finding other accounts. Using this query can verify that assumption.

site:youtube.com OR site:instagram.com "{username}" OR "{first + last name}" "tiktok" OR "tik tok" OR "tiktok.com/@{username}"

This will be the largest Google query covered in this guide, so it'll be step by step. The site:youtube.com OR site:instagram.com tells Google only to show results for YouTube or Instagram.



Extracted username list (a)

The "{username}" OR "{first + last name}" command looks for the name or username of the subject. The "tiktok" OR "tik tok" OR "tiktok.com/@{username}" command tells Google to look for mentions of the word tiktok, tik tok (spelling variation) or the exact URL of the subject. These three commands are chained together by an understood AND operator, so we don't have to specify it. Here's an example.

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This query will only yield results that include content from YouTube or Instagram that match the subject's specific identifiers (name and username). It is important to explore this content, looking for deleted videos, username changes, comments, likes, and other evidence that can be used in the investigation. After verifying Instagram and YouTube, expand to LinkedIn, Twitter, Facebook, and other available profiles. Building a holistic social network for a subject requires information that might not be found on a more public profile like TikTok. Expand timelines to include content before (and sometimes after) the most recent TikTok video. Discover new locations the subject has been, groups they're a part of, or topics they've discussed. Create a robust investigation that produces actionable intelligence.

Using a tool like Skopenow can automate each process outlined in this guide. Skopenow will automatically conduct reverse username searches across all social media platforms and expand the search using publicly available information from 1000's of sources. Skopenow will automate the collection, archive the followers and follow lists for further investigation. Lastly, Skopenow's automatic report builder will save time organizing the hundreds of data points collected in a clean and organized manner.

Contact us for a demo to see how Skopenow can streamline your OSINT workflow.